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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,965	04/20/2007	Jonathan David Harwood	1170/45164/158-PCT-US	7171

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EXAMINER	
GLASS, ERICK DAVID	

ART UNIT	PAPER NUMBER
2837	

NOTIFICATION DATE	DELIVERY MODE
12/11/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptodocket@trexlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/581,965	HARWOOD, JONATHAN DAVID	
	Examiner	Art Unit	
	Erick Glass	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7 and 19* is/are rejected.

7)☒ Claim(s) *4,8,9,17,18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/7/06,12/17/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masino (US 7,030,582).

With respect to claim 1, Masino teaches a method of electronically commutating a permanent magnet rotor brushless dc motor (fig. 1, 110) having three phase stator windings (fig. 1, 111-113) for producing rotating magnetic flux comprising the steps of: commutating current to successive combinations (column 2, lines 41-65) of two of said windings to cause flux rotation in a desired direction, sensing (fig. 1, 130) in only one of said windings the periodic back EMF (column 3, lines 1-7) induced by rotation of the permanent magnet rotor, said sensing being enabled in the two out of six 60° intervals of flux rotation when the sensed winding has no current commutated to-it (in 3 phases, 120 degrees out of phase motor, each phase has 2 commutation intervals every full rotation, 360 degrees; column 8, lines 20-43), digitising said sensed back EMF signal in said one winding by detecting the zero- crossings of said signal (column 4, lines 50-59), determining a half period time of said signal by obtaining a measure of the time between the pulse edges in the digitised signal which are due to zero crossings(figs. 2a and 2b are digital versions of applicants fig 4, half period is going to be 180 degrees, 1 zero

cross every 180 degrees; column 8, lines 20-43), from said half period time deriving the 60° flux rotation time (commutation period) and causing each said commutation to occur at times which are substantially defined by each logic transition in said digitised signal due to zero crossings and at the derived 60° and 120° angles of flux rotation which follow said zero crossings (with 180 half cycle, dividing by phases 3, gives commutational intervals of 60 degrees, next being 120; column 8, lines 20-65; fig. 10 zero crosses every 60 degrees from 3 phases).

With respect to claim 2, Masino teaches a method according to claim 1 wherein said derived commutation times are determined by calculating one third and two thirds respectively of said half period time (with 180 half cycle, dividing by phases 3, gives commutational intervals of 60 degrees, equivalent to 1/3 and 120 degree, equivalent to 2/3; column 8, lines 20-43; fig. 10, zero crosses every 60 degrees).

With respect to claim 3, Masino teaches a method according to either of claims 1 or 2 wherein said half period is a moving average of a succession measured times between zero-crossings (with each phase commutating once every half cycle and twice every full cycle (360); fig. 10 zero).

With respect to claim 5, Masino teaches an electronically commutated brushless dc motor comprising: a stator having a plurality of windings (column 4, line 45) adapted to be selectively commutated to (column 4, lines 41-65) produce a rotating magnetic flux, a rotor (column 4, line 46) rotated by said rotating magnetic flux; a direct current power supply having positive and negative output nodes; commutation devices (fig. 1, 130) connected to respective windings which selectively switch a respective winding to

said output nodes in response to a pattern of control signals which leave at least one of said windings unpowered at any one time while the other said windings are powered so as to cause stator flux to rotate in a desired direction; digitising means (column 4, lines 50-59) coupled to one only of said windings for digitising the back EMF induced in that winding by detecting the zero crossings of said back EMF signal; and

a microcomputer (fig. 12, 1200) operating under stored program control (column 18, lines 1-8), said microcomputer having an input port (fig. 12, port to back emf on low right of 1200) for said digitized back EMF signal and output ports (fig. 12, 1210 links to 100) for providing said commutation switch control signals, said microcomputer determining from said digitised back EMF signal a measure of the half period thereof by measuring the time between the pulse edges in the digitised signal which are due to zero-crossings (figs. 2a and 2b are digital versions of applicants fig 4, half period is going to be 180 degrees, 1 zero cross every 180 degrees; column 8, lines 20-43), said microcomputer effectively dividing said determined half period by a number equal to the number of stator windings to produce a commutation period (with 180 half cycle, dividing by phases 3, gives commutational intervals of 60 degrees, equivalent to 1/3 and 120 degree, equivalent to 2/3; column 8, lines 20-65; fig. 10, zero crosses every 60 degrees), said microcomputer producing commutation control signals at said output ports to cause the stator flux to rotate whereby switchings of said commutation devices are timed to (column 15, lines 44-48; fig. 10) occur at each zero-crossing of said back EMF signal and at intervals there between substantially equal to said commutation period.

With respect to claim 6, Masino teaches motor according to claim 5 wherein said microcomputer is programmed to switch (column 15, lines 44-48; fig. 10) said commutation devices at intervals between said zero-crossings of said back EMF signal which are calculated as one third and two thirds respectively of said measure of half period time (with 180 half cycle, dividing by phases 3, gives commutational intervals of 60 degrees, equivalent to 1/3 and 120 degree, equivalent to 2/3; column 8, lines 20-65; fig. 10, zero crosses every 60 degrees).

With respect to claim 7, Masino teaches motor according to claim 5 wherein said microcomputer is programmed to provide said measure of half period time by calculating a moving average of successive measured times between pulse edges in said digitised signal which are due to zero- crossing (with each phase commutating once every half cycle and twice every full cycle (360); fig. 10 zero).

With respect to claim 19, Masino teaches motor according to claim 6 wherein said microcomputer is programmed to provide said measure of half period time by calculating a moving average of successive measured times between pulse edges in said digitised signal which are due to zero- crossings (with each phase commutating once every half cycle and twice every full cycle (360); fig. 10 zero).

Claims 4, 8, 9, 17, 18, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Glass whose telephone number is (571)272-8395. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on 571-272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENTSU RO/
Primary Examiner, Art Unit 2837

/Erick Glass/
Examiner, Art Unit 2837